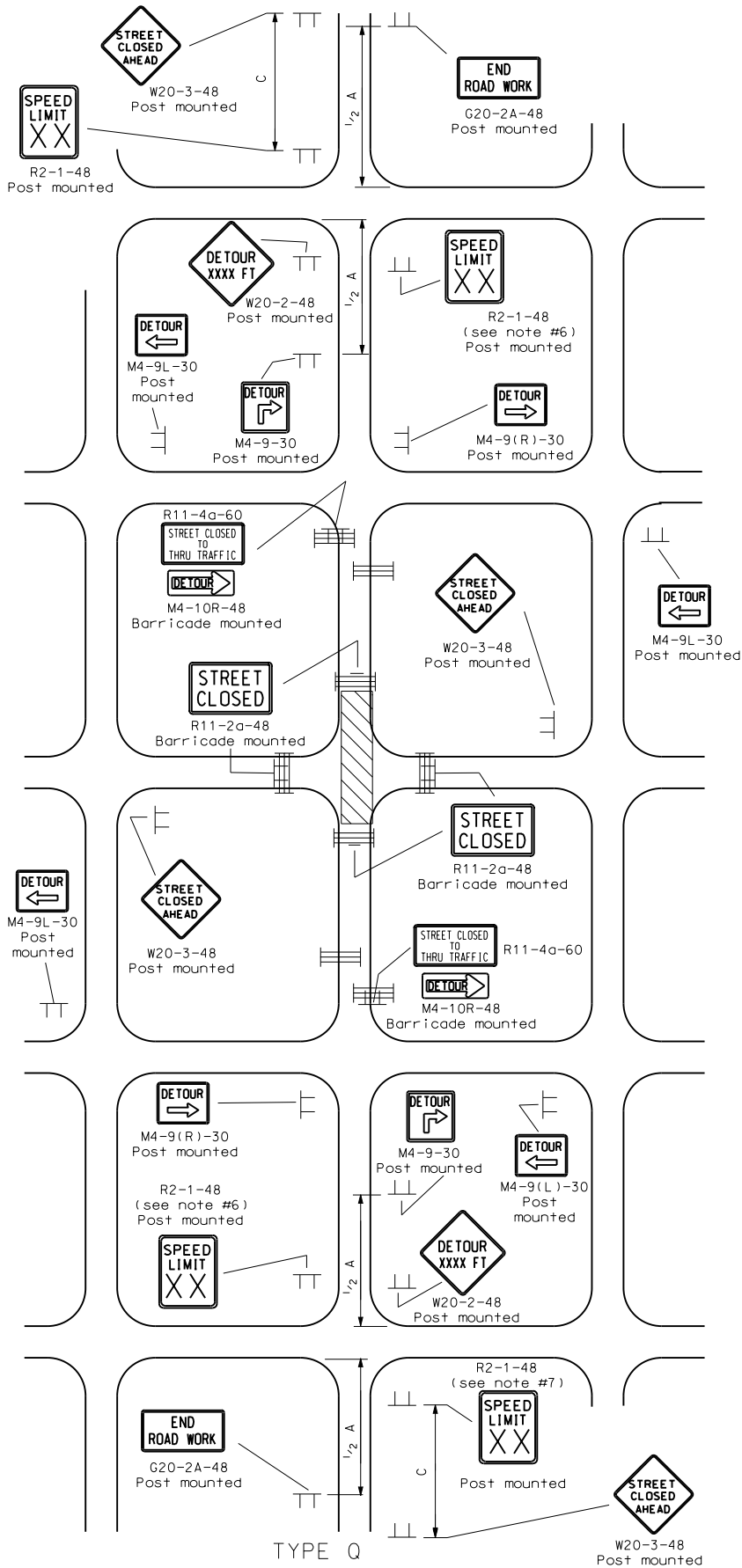
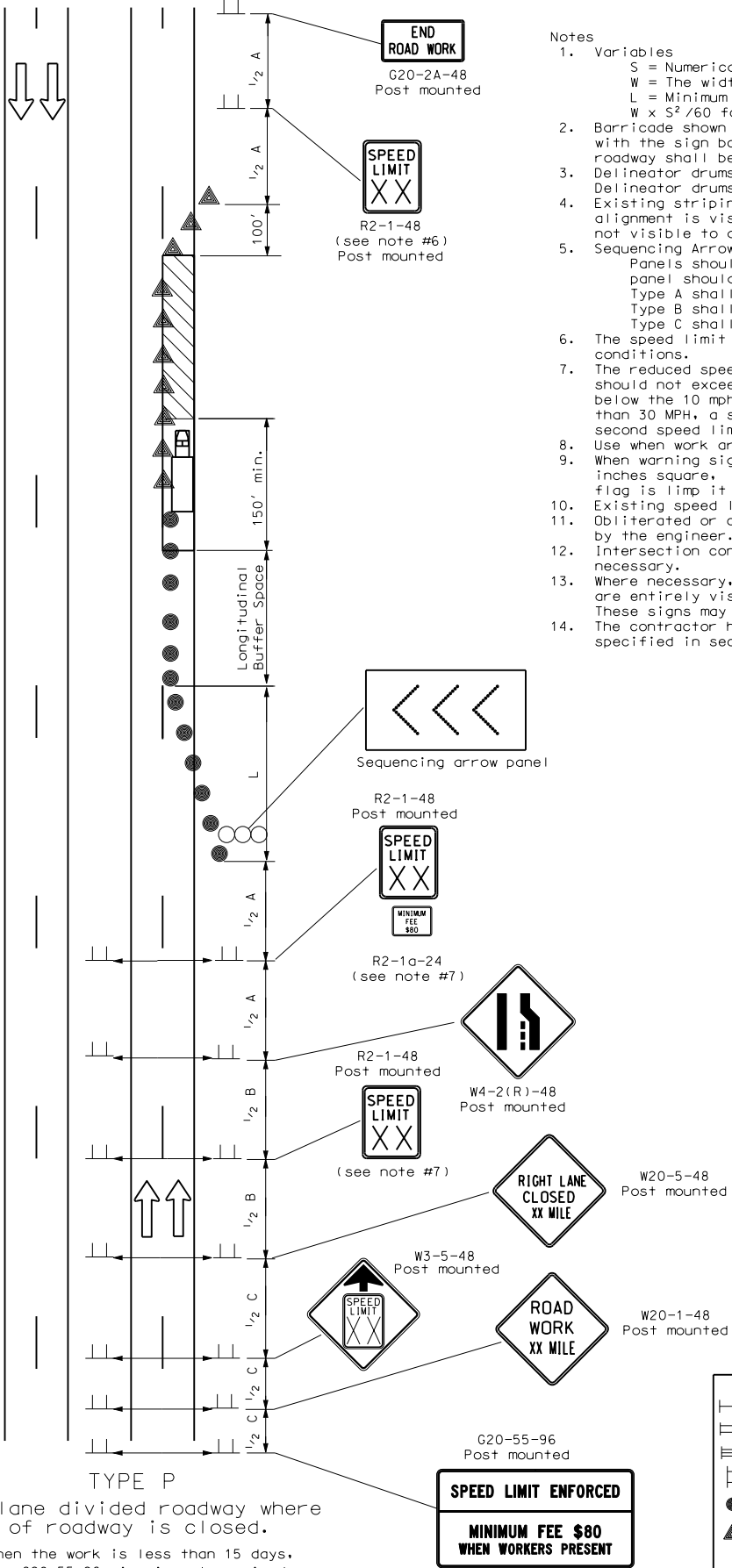


CONSTRUCTION SIGN AND BARRICADE LOCATION DETAILS



Where city streets are used for detouring traffic Urban projects do not need the G20-55-96 and R2-1a-24 signs.

4 lane divided roadway where 1/2 of roadway is closed. When the work is less than 15 days, the G20-55-96 sign is not required



- Notes
- Variables
    - S = Numerical value of speed limit or 85th percentile.
    - W = The width of taper
    - L = Minimum length of taper, or  $S \times W$  for freeways, expressways, and all other roads with speeds of 45 mph or greater, or  $W \times S^2/60$  for urban, residential, and other streets with speeds of 40 mph or less.
  - Barricade shown to be placed on roadway shall be on a moveable assembly. Sign to be mounted on barricades shall be mounted with the sign bottom on the top of the top barricade bar. Signs shown to be placed on the roadway shall be placed on skid mounted assemblies.
  - Delineator drums, or cones used for tapering traffic shall be spaced at dimension "S".
  - Delineator drums, or cones used for tangents shall be spaced at 2 times "S".
  - Existing striping shall be removed as required. Delineator will only be used when inslope is 4:1 or better and roadway alignment is visible to approaching vehicles. Vertical panels shall be used where roadways has steep slopes and not visible to approaching vehicles. Delineators and vertical panels shall be installed back to back.
  - Sequencing Arrow Panels
    - Panels should normally be placed at the beginning of the taper. Where shoulder width does not provide sufficient room the panel should be moved closer to the work area so that it can be placed on the roadway surface.
    - Type A shall be used on roadways with slow moving traffic speeds and low volume (25 mph and 750 ADT or less).
    - Type B shall be used on roadways with moderate traffic speeds and volumes (40 mph 5000 ADT or less)
    - Type C shall be used on roadways with high traffic speeds and volumes (over 40 mph and 5000 ADT).
  - The speed limit shall be re-established. The exact speed limit shall be determined in the field, dependent on location and conditions.
  - The reduced speed limit shall be determined dependent on the in place speed limit before construction. The speed limit reduction should not exceed 10 mph below the existing speed limit, unless the design speed of the work zone feature has been reduced below the 10 mph. In this case, the speed limit reduction shall not exceed 30 MPH. Where speed limits are to be reduced more than 30 MPH, a second speed limit sign shall be installed with the desired speed reduction but shall not exceed 30 MPH. The second speed limit sign shall be placed at 1/2 B.
  - Use when work area is 1 mile or longer.
  - When warning signs are used in urban areas and the signs are not portable, flags shall be installed. The flags shall be 24 inches square, mounted perpendicular to the edges of the diamond sign, and at such a distance above the edge so that when the flag is limp it will not touch the sign. Rural areas will not require flags.
  - Existing speed limit signs within a reduced speed zone shall be covered.
  - Obliterated or covered pavement marking shall be paid for as Obliteration of Pavement Marking. The covering shall be approved by the engineer.
  - Intersection control for Type Q may have to be changed on detour. The Engineer in the field shall determine what control is necessary.
  - Where necessary, safe speed to be determined by the Engineer. When parking is present, signs shall be placed so they are entirely visible above parked vehicles or placed at the edge of the parking area so they are visible to oncoming traffic. These signs may be skid mounted when placed on the roadway surface.
  - The contractor has the option of using portable sign supports in lieu of post mounted sign as shown on the standard drawings as specified in section 704.03 C.

Longitudinal Buffer Space		
Speed (mph)	Length Min (feet)	
	A	B
20	115	
25	155	
30	200	
35	250	
40	305	
45	360	
50	425	
55	495	
60	570	
65	645	
70	730	
75	820	

ADVANCE WARNING SIGN SPACING				
Road Type	Distance Between Signs Min. (ft)			
	A	B	C	
Urban - Low Speed (30 mph or less)	150	150	150	
Urban - Low Speed (over 30 to 40 mph)	280	280	280	
Urban - High Speed (over 40 mph to 50 mph)	360	360	360	
Rural - High Speed (over 50 mph to 65 mph)	720	720	720	
Urban Expressway and Freeway (55 mph to 60 mph)	850	1350	2200	
Rural Expressway and Freeway (70 mph to 75 mph)	1000	1500	2640	
Interstate/4-Lane Divided (Maintenance and Surveying)	750	1000	1500	

NORTH DAKOTA DEPARTMENT OF TRANSPORTATION	
10-1-86	
REVISIONS	
DATE	CHANGE
09-03-96	70 MPH
01-31-97	Sign spacing
10-01-99	General revisions
11-15-99	Add Taper Width to note
01-05-01	Revised note 3
07-19-02	Reversed End Road Work & Speed Limit Signs
07-25-03	Revised R2-1a and W20-1
04-01-04	Rev. fee sign & warning & buffer spacing, Rev note 7
09-15-04	General revisions
12-01-04	PE Stamp added
06-29-05	Revised W4-2, Replaced R2-5a with W3-5, Rev. Adv. Warning Table, Rev. Note 7

This document was originally issued and sealed by  
**MARK S. GAYDOS**  
Registration Number  
**PE- 4518 ,**  
on **06/29/05** and the original document is stored at the  
**North Dakota Department of Transportation**